Lighter Constituent.

Principal series.	First subordinate series.	Second subordinate series.
20400	6678	7282
5016	4922	5048
3965	4388	4438
3614	4144	4169
3448	4009	4024
3355	3927	3936
3297	3872	3878
3258	3834	3838
3231	3806	3808
3213	3785	

Heavier Constituent (Helium proper).

	Double lines.	Double lines.
11220	5876	7066
3889	4472	4713
3188	4026	4121
2945	3820	3868
2829	3705	3733
2764	3634	3652
2723	3587	3599
2696	3555	3563
2677	3531	3537
	3513	3517
	3499	3503
	3488	3491
	3479	3482
	3472	
	3466	
	3461	

C. RUNGE AND F. PASCHEN.

NOTES.

THE third International Congress of Zoologists (an account of the proceedings at which will appear in a subsequent issue of NATURE) has just been held at Leyden, and appears to have been a great success. No fewer than twenty nationalities were represented, and the arrangements for the comfort of the members were all that could be wished. It was decided to hold the next meeting (in 1898) in England, and Sir William H. Flower was elected President. During the meeting it was announced that the Senate of the University of Utrecht had conferred degrees upon Sir William H. Flower, M. Milne-Edwards, of Paris, and Prof. Weismann, of Freiburg.

TELEGRAMS from St. John's, dated September 22, announced the return, in the steamer *Kite*, of the Peary Expedition. The result of the expedition was a most disappointing one, as Lieut. Peary and his companions were unable to extend their journeyings beyond Independence Bay, which point was the furthest north reached by Lieut. Peary in his expedition of 1892. The main cause of failure was the loss of all the stores of provisions, save one, which had been got together and deposited along the intended line of march last year, all having been buried by perhaps the heaviest snowfall known, which obliterated all traces of them. The sufferings endured by the explorers, on the verge of starvation as they were for the greater part of the time, can hardly be estimated, and when, on July 31, the *Kite* arrived, they were utterly broken down and ill, but they subsequently recovered under careful treatment. The expedition, according to a later telegram, will not be entirely barren of scientific results, as Lieut. Peary is reported to have mapped Whale Sound, and completed his studies of the Eskimo Highlanders. He has also brought back another year's meteorological record. The relief expedition, too, is credited with obtaining the largest collection of Arctic fauna and flora ever acquired, and Prof. Salisbury, of Chicago University, did good geological work.

A COMMUNICATION was made to the press on Friday last by Reuter's Agency with reference to the movements of the Jackson-Harmsworth Polar Expedition. It was admitted that the intelligence received had been made in a somewhat meagre and disjointed form; but from it could be gleaned that on September 7 of last year the expedition arrived safely on the coast of Franz Josef Land and in the locality of Cape Flora. On September 10 the ice closed round the *Windward*, and she was frozen in for the winter. On February 23 the sun returned, and on March 10 Mr. Jackson started on his northern journey, with a quantity of stores, and made his first depôt. Various journeys to and fro with provisions, &c., were made, and depôts formed, the most northern of which was about 100 miles from the camp. The *Windward* has, it is expected, now set sail for home, bearing letters and journals of the early part of the expedition.

THE expedition to Alaska of the United States Geological Survey, for the purpose of examining into the coal and gold mines of the territory, has returned safely to San Francisco after a successful and very interesting season, during which, incidentally, many of the glaciers and volcanos were studied. Messrs. Becker and Dall will return to Washington by October 1, to submit their report upon the mineral resources to the Director of the Survey, which will be printed as soon as the necessary analyses, &c., can be made.

WE have to record the death, at Berlin, at the age of seventy-six, of Prof. Bardeleben, the eminent surgeon and author of "Lehrbuch der Chirurgie und Operationslehre."

THE death is announced, from Bendigo, Victoria, of Dr. Paul Howard MacGillivray, well known as a medical man and for his researches on Polyzoa.

AT the meeting of the Entomological Society of London, to be held on Wednesday, October 2, the following papers will be read:—"Contributions towards the History of Maruina, a New Genus of Diptera" (*Psychodidæ*), by Dr. Fritz Müller; "Remarks on the Homologies and Differences between the First Stages of Pericoma and those of Maruina," by Baron Osten Sacken.

THE annual meeting of the Federated Institution of Mining Engineers has just taken place at Hanley, and papers were read on "The Use of Steel Girders in Mines," "Economic Minerals of the Province of Ontario," and "Gold Mining in Nova Scotia." The Institution seems to be in a flourishing condition, the membership having risen from 1189 in 1889–90, to 2199 at the present time. The prizes for papers on "The Prevention of Accidents in Mines" have been awarded as follows: (1) Mr. A. Kirkup (2) Mr. W. N. Drew; Messrs. E. A. Allport and A. Noble were bracketed for the third place.

THE Royal Society of New South Wales offers its medal and the sum of £25 for the best communications (provided such be deemed of sufficient merit) on original research in the following subjects:—"The Origin of Multiple Hydatids in Man"; "The Occurrence of Precious Stones in New South Wales, with a description of the Deposits in which they are found"; "The Effect of the Australian Climate on the Physical Development of the Australian-born Population"; "The Physiological Action of the Poison of any Australian Snake, Spider, or Tick"; "The Chemistry of the Australian Gums and Resins"; "The Embryology and Development of the Echidna or Platypus"; "The Chemical Composition of the Products from the so-called Kerosene Shale of New South Wales"; "The Mode of Occurrence, Chemical Composition and Origin of Artesian Water in New South Wales." The competition is open to all, and is not subject to any restriction, save that the communication to be successful must be either wholly or in part the result of the competitor's own original observation or research. The successful essays will be published in the Society's annual volume, and fifty copies of the paper will be supplied to their writers free of charge. Particulars as to the latest dates for sending papers, and all other necessary information, may be obtained from the Honorary Secretaries, at the house of the Royal Society of New South Wales, 5, Elizabeth-street, Sydney.

THE Manchester Trades Council has recently passed a resolution strongly in favour of the Report of the Select Committee of the House of Commons on Weights and Measures, in which the Council expresses the hope that no efforts will be spared to make the Committee's recommendations law. As can be readily understood, the New Decimal Association is much encouraged by the attitude taken in so important a commercial centre as Manchester, and it is to be hoped that at no distant date their efforts will be crowned with success, and that the present cumbrous system will be for ever abandoned.

THE metric system of weights and measures is to be obligatory in the United States of Mexico from September 16, 1896. This system has been in use in the Government departments of Mexico for some time past, but a decree recently passed makes it the sole legal system throughout the Republic, and will make an end of the various old Spanish measures hitherto in vogue in ordinary business transactions.

DR. VAN RIJCKEVORSEL and Herr van Bemmelen are engaged on a research which has for its object to determine the influence of elevation above sea-level on the magnetic elements. For this purpose an accurate magnetic survey must be made of some moderately high mountain, of non-magnetic material and sufficiently far removed from magnetic masses. The Righi seems to fulfil these conditions most satisfactorily; but in order to decide the matter, Herrn. van Rijckevorsel and van Bemmelen selected thirty stations, distributed on the low ground round the Righi in three concentric circles with the mountain as centre. The magnetic elements have been determined at these stations, but the calculations are not yet completed. If these indicate no traces of disturbance, due to the Righi or its surroundings, the survey of the mountain will be proceeded with.

THE latest number of the *Records* of the Geological Survey of India contains a translation of a paper by Dr. F. Kurtz, on the Lower Gondwana beds of Argentina (from *Revista del Mus. de la Plata*). In this is recorded an important discovery of plant-remains in shales at Bajo de Velis. These fossils are well-preserved, and while being quite different from the Argentine plant-remains already found, show a close affinity to the plants of the Kaharbari beds of the Lower Gondwanas of India, as well as to those of the Ekka-Kimberley beds of South Africa, the Newcastle and Baccus-Marsh beds of Australia, and the Mersey beds of Tasmania. The previously-known plant-bearing beds of Argentina consisted of two series—one containing a Rhætic flora, resembling that of the Stormberg (Upper Karoo) beds of South Africa, the Hawkesbury beds of Australia, and the Rajmahal (Upper Gondwana) series of India; the other containing a flora of Lower Carboniferous character. The newly-discovered flora must be intermediate in age between these two—that is to say, it cannot be older than Upper Carboniferous, nor younger than Triassic; and with it must go the flora of the important coal-bearing Upper Gondwana beds of India. These have already been assigned to the Upper Carboniferous (at lowest) by Messrs. Medlicott and Blanford, and the Indian Survey, and the new discoveries in Argentina give a satisfactory confirmation of their views.

WE note the publication of the first *Bulletin des Observations Météorologiques*, 1894, by the Observatory of St. Louis, St. Heliers, Jersey, containing monthly means from direct observations and from self-recording instruments. The Director of this new Observatory is the Rev. M. Dechevrens, who has already done good work at Zi-ka-wei, near Shanghai, and by the investigation of the typhoons of the China Seas, in connection with the Shanghai Meteorological Society. The St. Louis Observatory is provided with a tower about 150 feet high, for the special study of vertical wind currents and atmospheric electricity.

THE Acclimatisation Society of Moscow must be credited with more than ordinary originality and ingenuity in its efforts to improve the system of bee-keeping in vogue among the Russian peasants. Antiquated and unremunerative methods of hive management are still in general use in Russia; and, in order to diffuse a knowledge of the more rational methods of modern apiarists, the Society last year organised a travelling bee-keeping exhibition upon a novel and, as it proved, most successful plan. A barge, 70 metres long and 8 metres broad, was procured and fitted up with a museum, a garden with trees and flower-beds, hives of all kinds, old and new, and a number of hives with living bees; there were also dwelling-rooms for the travelling staff. The museum contained examples of bee-keeping appliances and products, together with a set of preparations illustrating the structure and life-history of bees and their natural enemies. The staff in charge of the exhibition consisted of a practical bee-keeper, two entomologists, and ten men-servants for the vessel. The floating exhibition was towed down the river out of Moscow by twenty horses, ten on each bank; and six towns and about twenty villages were visited between the old capital and the town Kaluga. The travelling was done during the night. During the day, from 8 a.m. to 9 p.m., a halt was made at some town or village; the objects in the museum were explained to visitors by the staff, and the methods of working the model hives were demonstrated to the bee-keeping country folk. The exhibition has worked with great success. The great expense which this interesting and instructive exhibition demanded was most willingly defrayed by Herr F. Motschalkin, who is himself an enthusiastic bee-keeper.

A NEW determination of the lowest temperature at which a hot body becomes visible is published by Sgr. P. Pettinelli, in the *Nuovo Cimento*. He heated a cast-iron cylinder 30 cm. long and 14 cm. broad in a wrought-iron jacket over a Bunsen burner to a temperature of 460° C., as indicated by an air thermometer, and then observed its flat end in a dark room from a point 60 cm. above it. When it had cooled to about 415°, the red heat vanished and gave way to an indefinite hazy glow. This glow completely disappeared at 404°, and repeated observations gave an error of only 3°. Highly emissive substances, such as the "mantles" made by Auer and others for incandescent gas lighting, became visible at the same temperature; but reflecting surfaces had to be heated 20° higher before they appeared to the eye, and glass still more. These low temperature rays were found to traverse glass and water like ordinary light rays, but they suffer a comparatively greater absorption. Different eyes differ slightly in their capacity of seeing them, the maximum divergence being about 6°. But then the extent of surface must be the same. Sgr. Pettinelli found that if he screened off all but 1/40th of the surface, the body had to be heated 6° higher than before to become visible; if 1/200th, 20° higher; and if 1/800th only was exposed to view, the minimum temperature of visibility was 460°. Hence he rightly concludes that the contradictory results obtained by previous experimenters are due to differences in the areas of the hot bodies investigated.

THE Irish elk (*Megaceros hibernicus*) has hitherto had a somewhat isolated position as the only species of its genus known to naturalists up to the present. A new claimant to the same generic title has, however, been recently unearthed in Germany, and has been described by Prof. Nehring, of Berlin, under the name *M. Ruffii.* The new species is intermediate in many of its characters between the Irish elk and the fallow deer (*Dama vulgaris*). It appears to have lived during the first interglacial epoch, while the Irish elk flourished at a somewhat later geological period. It may possibly, therefore, be regarded as the ancestor of the latter type. The antlers of *M. Ruffii* have fewer "points" or processes than those of *M. hibernicus;* and, although the skull of the animal was as large as or even larger than that of *M. hibernicus*, the antlers were markedly smaller and diverged from one another much less widely than in the case of the latter species. A restoration of the animal accompanies Prof. Nehring's description in *Wild und Hund* for July 19, 1895. From this picture the differences between this new species and *M. hibernicus* may be at once detected.

SOME important experiments of great practical interest have just been published by Dr. Breslauer on the antiseptic properties possessed by disinfectants mixed with different fats in the shape of ointments. As long as fourteen years ago Koch pointed out that carbolic acid combined with olive oil or "carbolised oil," contrary to the prevailing impression, possessed no antiseptic properties. Dr. Breslauer has extended these experiments to an exhaustive examination of various disinfectants, such as carbolic acid, corrosive sublimate, boric acid, nitrate of silver, &c., in combination with oil, vaseline, fat, lanolin anhydricum, lanolin, and unguentum leniens. It was found that the degree of antiseptic power possessed by the disinfectant depended, in a very remarkable manner, upon the particular diluent employed, and that in all cases the best antiseptic results were obtained with disinfectants in combination with lanolin or unguentum leniens. Thus in a series of experiments on the antiseptic effect produced by adding five per cent. of carbolic acid to various substances, it was ascertained that the *Staphylococcus pyogenes aureus* was still living after being immersed in carbolised oil for three days, in carbolised vaselin it survived one day, in fat four hours, in lanolin anhydricum two hours, in lanolin thirty minutes, and in unguentum leniens twenty minutes. Similar results were obtained not only with other bacteria, but also with different disinfectants. Dr. Breslauer has also examined the bactericidal properties of other ointments in frequent use, such as unguentum zinci, unguentum cinereum (benzoatum), and unguentum precipitatum album, and whilst the two latter were found to be possessed of highly antiseptic properties, the former exercised no perceptible effect whatever. In employing ointments it would appear, therefore, advisable to use the disinfectant selected in combination with lanolin or unguentum leniens instead of supplying vaseline, oil, or other fats, the addition of the latter, according to Dr. Breslauer, serving only to reduce the antiseptic action of the disinfectant. This subject is curiously one which has had, so far, hardly any attention bestowed upon it, and with the exception of some experiments by Gottstein, published in 1889, and, still more recently, an inquiry by Ludwig Bach into the antiseptic effect of various eye ointments, Dr. Breslauer's communication seems to be the only one which has appeared.

WE have recently received two new parts of the *Indian Museum Notes*, from the Trustees of the Museum, being vol. iii. parts 4 and 5. Part 4 is devoted to an account of the insects and mites which attack the tea-plant in India, and includes full descriptions and, in most cases, good figures of the principal insects, &c., discussed; and occasionally of their parasites also. The insects belong to all the more important plant-feeding orders; but what appears to us remarkable is the very large number of *Lepidoptera* which are injurious to the tea-plant, as compared with other insects. Thus, only three beetles are mentioned, belonging to the *Melolonthidæ*, *Chrysomelidæ*, and *Curculionidæ* respectively; as against nineteen *Lepidoptera Heterocera* of various families. The pamphlet concludes with a practical appendix on insecticides. It must not, however, be supposed that a treatise of seventy pages can possibly exhaust the subject of the enemies of any particular plant, especially when they are discussed in detail. A glance at the most important European book on entmological botany (Kaltenbach's "Pflanzenfeinde") is sufficient to show us that many plants are attacked by hundreds of different species of insects; and if this is the case in Europe, it cannot but be true to a still greater extent in tropical countries. But fortunately insects are not always uniformly abundant. They are affected by variations of the season: parasites, and many other influences which are more or less obvious to us; and it is only occasionally that one or other of the numerous species which feed upon any given plant becomes sufficiently abundant to cause any serious injury to it. The other number of the *Indian Museum Notes* before us (part 5) is more varied in its contents. It contains an account of the progress of entomology in the Indian Museum, from 1884-1894, by Mr. E. C. Cotes; some short papers by different entomologists on Indian *Diptera* and *Rhynchota*, and a series of miscellaneous notes on insects of all orders, by Mr. Cotes. This part is not only illustrated, like the other, by numerous woodcuts, but also contains three well-executed plain plates.

THREE important papers by Prof. E. D. Cope, and two by Prof. W. B. Scott, make up, with seven plates, the part recently distributed (vol. ix. part 4) of the *Journal* of the Academy of Natural Sciences of Philadelphia. Prof. Cope treats of new and little known Palæozoic and Mesozoic fishes, and describes Cyphornis—an extinct genus of birds. The genus is established on a species of bird represented by the superior part of a tarsometatarse, obtained by Dr. G. M. Dawson from a bed of indurated greenish clay of unknown age from Vancouver Island. The bird appears to possess real affinities with the Steganopodes, combined with affinities to more primitive birds with a simple hypotarsal structure. "The presumed affinity with the Steganopodes," remarks Prof. Cope, "indicates natatory habits, and probable capacity for flight. Should this power have been developed in *Cyphornis magnus*, it wlll have been much the largest bird of flight thus far known." Another paper by Prof. Cope is on extinct *Bovidæ*, *Canidæ* and *Felidæ*, from the Pleistocene of Southern Kansas and Western Central Oklahoma. Prof. W. B. Scott's memoir on the structure and relationships of *Ancodus* supplements the extensive investigations of Kowalevsky and Filhol by giving an account of the American species of that genus, and by showing the points of resemblance and differences between the approximately contemporaneous species of *Ancodus* in America and Europe. Prof. Scott concludes his valuable paper as follows:—"With the facts at present known, all seem to point to the origin of *Ancodus* in the Old World and its migration to America, in the interval between the Eocene and the Oligocene (Uinta and White River), yet until the American artiodactyls from the middle and upper Eocene are far better known than at present, such a conclusion cannot be regarded as final." The second paper by Prof. Scott deals with the osteology of *Hyænodon*—a genus described by him in 1877, so far as the materials then available would permit. The Princetown expedition of last year resulted in the collection by Mr. Hatchet of several more or less complete skeletons representing a number of species. These specimens of *Hyænodon* enabled Prof. Scott to supplement the earlier account with the present paper, in which is given a restoration of the skeleton of the very curious and remarkable animal with which it deals.

MESSRS. ROWLAND WARD AND CO., of Piccadilly, are sending out invitations to naturalists to inspect a mounted example of the White Rhinoceros (*Rhinoceros simus*) from Zululand. The two specimens brought home about two years ago were from Northern Mashonaland. Thus this animal, until lately supposed to be quite extinct, has now been found in a second locality. But these are now the only two spots on the face of the earth where this huge creature, formerly abundant in the Cape Colony, still exists, in very dwindling numbers, which will, no doubt, be now rapidly diminished.

A COMMITTEE of six gentlemen has been appointed by the Governor-General of Goa, India, to carry on excavations in the ancient city of Goa, in rearch of relics of the traditional grandeur of the past, and to take the necessary steps for the preservation of the monuments of Portuguese rule in India in the earlier time.

AN electrical forge, where the whole of the heating required is done by electricity, is in operation at Niagara Falls, the power being supplied by the great cataract. The cost of making a horse-shoe at the electric forge is, it is stated, much less than at an ordinary coal forge. We hear, too, that corn is being threshed by electricity, with very satisfactory results, at Mjölby in Sweden.

WE have received from Mr. W. Radcliffe, of Andreas School, Isle of Man, the inventor of the "Gonagraph," an instrument for drawing perfectly accurate equilateral triangles, squares, pentagons, hexagons, heptagons and octagons, an arithmetical puzzle. The puzzle consists of nineteen small cubes, having a face on each numbered with one of the first nineteen numbers, which are to be placed upon squares, symmetrically arranged on a board, five on the middle row, and two rows of four and three squares to right and left of this. The numbers are to be so arranged that their sum along each of twelve straight lines shall make up thirty-eight. This sum is also obtainable from other symmetrical arangements. It will thus be seen that the puzzle is of the nature of a magic square, and is a very ingenious one. The author has favoured us with his solution, which naturally is at present kept back. He has not furnished us with a clue to his arrangement, and we have in vain searched for it; nor does he say whether he has attempted any extension of the puzzle to thirty-seven or a higher number of cubes. The "thirty-eight" puzzle can be obtained direct from the inventor in a small box for sixpence.

A DESCRIPTION has been sent to us of a new arc lamp for projection purposes, which has been devised by Mr. Cecil M. Hepworth. The instrument has three regulating discs or milled heads of vulcanite, which project at the back, so as to be under the control of the lanternist. The top and bottom discs are for the purpose of regulating the positions of the carbons, and the middle disc has three duties to perform, viz. to bring the carbons slowly together as their points waste in consumption, by a push action to cause the carbons instantaneously to touch, and by a spring to as quickly separate, while by an upward movement the worm-wheel is thrown completely out of gear, and the carbons can be rapidly separated or brought together by hand, a provision necessary for the saving of time when inserting new carbons.

THE September part of the *Proceedings* of the Physical Society of London has reached us, and contains, in addition to the usual valuable supplement of "Abstracts of Physical Papers from Foreign Sources," the following papers:—"A Theory of the Synchronous Motor," by W. G. Rhodes (continuation); "On the Use of an Iodine Voltameter for the Measurement of Small Currents," by Prof. E. F. Herroun, "On the Condensation and the Critical Phenomena of Mixtures of Ethane and Nitrous Oxide," by Dr. Kuenen; "An Electro-Magnetic Effect," by F. W. Bowden; and "The Electrical Properties of Selenium," by Shelford Bidwell, F.R.S.

THE September-October part of the *Physical Review* (Macmillan) contains the following articles: "A Study of the Polarisation of the Light emitted by Incandescent Solid and Liquid Surfaces," by R. A. Millikan, "Alternating Currents when the Electromotive Force is of a Zigzag Wave Type," by E. C. Rimmington, "On Ternary Mixtures," by W. D. Bancroft, part 2; and minor contributions.

BOURNE'S Handy Assurance Manual for 1895, by William Schooling, has been published. It contains in a small compass a whole host of information likely to be of use to those who are interested in insurance matters, and appears to have been compiled with great care.

WE have received from Messrs. G. W. Wilson and Co., Limited, 2 St. Swithin Street, Aberdeen, copies of their catalogues of lantern slides. The list of subjects illustrated is a very full one, and the catalogues may be had upon application.

ON the completion of the fiftieth year of its existence, the editor of the *Botanische Zeitung* publishes a very useful index of the papers contained in the first fifty volumes.

THE September number of the *Irish Naturalist* has just appeared, and is entirely devoted to reports of the Galway conference and excursion of the Irish Field Club Union, held in July.

THE additions to the Zoological Society's Gardens during the past week include a Bonnet Monkey (*Macacus sinicus*, ♀) from India, presented by Miss Larkin; a Macaque Monkey (*Macacus cynomolgus*, ♂) from India, presented by Mr. W. Aldridge; a Purple-faced Monkey (*Semnopithecus leucoprymnus*) from Ceylon, presented by Mrs. Griffith; a —— Monkey (*Cercopithecus*, sp. inc.) from Africa, presented by Miss Pigott; two Vulpine Phalangers (*Phalangista vulpina*, ♂ ♀) from Australia, presented by Mr. F. J. Horniman; a Magpie (*Pica caudata*), British, presented by Mr. H. E. Blandford; an Orange-cheeked Amazon (*Chrysotis autumnalis*) from Central America, presented by the Rev. W. J. Loftie; a Martinique (*Ionornis martinicus*), captured off the Island of Ascension, presented by Mr. H. W. Power; a Smooth Snake (*Coronella lævis*), a Common Viper (*Vipera berus*), British, presented by Mr. G. J. S. Warner; a Brown Capuchin (*Cebus fatuellus*) from Guiana, three Grant's Francolines (*Francolinus granti*) from East Africa, two Egyptian Trionyx (*Trionyx niloticus*) from the Congo, deposited; a Two-toed Sloth (*Cholopus didactylus*) from Brazil, a Yellow-naped Amazon (*Chrysotis auripalliata*) from Central America, purchased.

OUR ASTRONOMICAL COLUMN.

THE ORBIT OF μ^2 BOOTIS (Σ 1938).—Dr. T. J. J. See gives in the *Astr. Nach.*, No. 3309, Bd. 138, the results of his researches on this star. This double was discovered by Sir William Herschel in 1781, and since the time of Struve it has been very abundantly observed. In all parts of the orbit the pair is sufficiently wide to be seen with a 6-inch telescope. The investigation gives the following elements of μ Bootis; other elements are given for comparison.

	P	T	*e*	*a*	Ω	*i*	λ	Authority
				″	°	°	°	
1	146·649	1851·57	0·8529	1·320	94·7	49·4	87·1	Mädler 1847
2	182·6	66·0	0·491	1·165	166·1	47·5	23·0	Winagradsky 1872
3	314·34	60·88	0·5641	1·761	163·2	41·9	54·4	Hind 1872
4	200·4	65·2	0·51	—	172·0	45·0	20·1	Wilson 1872
5	198·93	65·5	0·4957	—	169·0	46·4	23·6	Klinkerfues
6	290·07	63·51	0·6174	1·500	183·0	44·4	17·7	Doberck 1875
7	280·29	60·51	0·5974	1·47	173·7	39·9	20·0	Doberck 1878
8	266·0	62·55	0·5668	1·057	166·7	35·2	40·9	Pritchard 1878
9	219·42	65·30	0·537	1·268	163·8	43·9	329·75	See 1895